AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An image-correction method, comprising:

a distance calculating step of calculating, by utilizing a distance calculating unit, a distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

a distance-correction value calculating step of calculating a distance-correction value, by inputting the calculated distance for corresponding variable in an N-order function which has coefficients for the variable, N being a positive integer;

a correction coefficient calculating step of calculating, based on a preliminarily set table that represents correspondences between distance-correction values and correction coefficients, a correction coefficient corresponding to the calculated distance-correction value; ~~and~~

a pixel signal correcting step of correcting a signal for the pixel based on the calculated correction coefficient~~,~~; and

an updating step of updating distance-correction values by changing ~~wherein~~ the coefficients for the variable in said N-order function in the distance-correction value calculating step~~are changeable~~ in response to change in optical settings of an image pick-up apparatus.

2. (Previously Presented) The image-correction method according to claim 1, comprising a correction coefficient calculating step of calculating the correction coefficient corresponding to the calculated distance-correction value, by, based on the table that represents correspondences between distance-correction values and correction coefficients, linear interpolation using distance-correction-value data and correction-coefficient data that are stored in the table.

3. (Original) The image-correction method according to claim 1, wherein the reference coordinates in the distance calculating step, the coefficients for the variable in the N-order function in the distance-correction value calculating step, and the distance-correction values and correction coefficients stored in the table in the correction coefficient calculating step can be determined for each color component of the pixel.

4. (Original) The image-correction method according to claim 1, comprising a distance calculating step of calculating the distance, by regarding as the distance the sum of the distance between the coordinates of a pixel corresponding to an image signal and the one of two sets of predetermined reference coordinates, and the distance between the coordinates of the pixel and the other of two sets of predetermined reference coordinates.

5. (Withdrawn) An image-correction method, comprising:

a horizontal-direction distance calculating step of calculating the horizontal-direction distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

a horizontal-direction distance-correction value calculating step of calculating a horizontal-direction distance-correction value, by inputting for the variable in a first N-order function (N being a positive integer) the horizontal-direction distance that has been calculated in the horizontal-direction distance calculating step;

a first correction coefficient calculating step of calculating, based on a first table that represents correspondences between horizontal-direction distance-correction values and first correction coefficients, a first correction coefficient corresponding to the horizontal-direction

distance-correction value that has been calculated in the horizontal-direction distance-correction value calculating step;

a vertical-direction distance calculating step of calculating the vertical-direction distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

a vertical-direction distance-correction value calculating step of calculating a vertical-direction distance-correction value, by inputting for the variable in a second N-order function (N being a positive integer) the vertical-direction distance that has been calculated in the vertical-direction distance calculating step;

a second correction coefficient calculating step of calculating, based on a second table that represents correspondences between vertical-direction distance-correction values and second correction coefficients, a second correction coefficient corresponding to the vertical-direction distance-correction value that has been calculated in the vertical-direction distance-correction value calculating step; and

a pixel signal correcting step of correcting a signal for the pixel, based on the first correction coefficient that has been calculated in the first correction coefficient calculating step and on the second correction coefficient that has been calculated in the second correction coefficient calculating step.

6. (Currently Amended) An image pickup apparatus, comprising:

a distance calculating unit that calculates a distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

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a distance-correction value calculating unit that calculates a distance-correction value, by

inputting the calculated distance for corresponding variable in an N-order function which has

coefficients for the variable, N being a positive integer;

a correction coefficient calculating unit that calculates, based on a preliminarily set table

that represents correspondences between distance-correction values and correction coefficients, a

correction coefficient corresponding to the distance-correction value that has been calculated by

the distance-correction value calculating unit; ~~and~~

a pixel signal correcting unit that corrects a signal for the pixel based on the correction

coefficient that has been calculated by the correction coefficient calculating unit~~,~~; and

a control unit that updates distance-correction values by changing ~~wherein~~ the

coefficients for the variable <u>in said N-order function in the distance-correction value calculating</u>

unit~~are changeable~~ <u>in response to change in optical settings of said image pick-up apparatus.</u>

7. (Previously Presented) The image pickup apparatus according to claim 6, comprising

a correction coefficient calculating unit that calculates the correction coefficient corresponding to

the distance-correction value that has been calculated in the distance-correction value calculating

unit, by, based on the table that represents correspondences between distance-correction values

and correction coefficients, linear interpolation using distance-correction-value data and

correction-coefficient data that are stored in the table.

8. (Previously Presented) The image pickup apparatus according to claim 6, wherein the

reference coordinates in the distance calculating unit, the coefficients for the variable in the N-

order function in the distance-correction value calculating unit, and the distance-correction

values and correction coefficients stored in the table in the correction coefficient calculating unit can be determined for each color component of the pixel.

9. (Previously Presented) The image pickup apparatus according to claim 6, comprising a distance calculating unit for calculating the distance, by regarding as the distance the sum of the distance between the coordinates of a pixel corresponding to an image signal and the one of two sets of predetermined reference coordinates, and the distance between the coordinates of the pixel corresponding to the image signal and the other of two sets of predetermined reference coordinates.

10. (Withdrawn) An image pickup apparatus, comprising:

a horizontal-direction distance calculating means for calculating the horizontal-direction distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

a horizontal-direction distance-correction value calculating means for calculating a horizontal-direction distance-correction value, by inputting for the variable in a first N-order function (N being a positive integer) the horizontal-direction distance that has been calculated in the horizontal-direction distance calculating means;

a first correction coefficient calculating means for calculating, based on a first table that represents correspondences between horizontal-direction distance-correction values and first correction coefficients, a first correction coefficient corresponding to the horizontal-direction distance-correction value that has been calculated in the horizontal-direction distance-correction value calculating means;

a vertical-direction distance calculating means for calculating the vertical-direction distance between the coordinates of an image-constituting pixel and predetermined reference coordinates;

a vertical-direction distance-correction value calculating means for calculating a vertical-direction distance-correction value, by inputting for the variable in a second N-order function (N being a positive integer) the vertical-direction distance that has been calculated in the vertical-direction distance calculating means;

a second correction coefficient calculating means for calculating, based on a second table that represents correspondences between vertical-direction distance-correction values and second correction coefficients, a second correction coefficient corresponding to the vertical-direction distance-correction value that has been calculated in the vertical-direction distance-correction value calculating means; and

a pixel signal correcting means for correcting a signal for the pixel, based on the first correction coefficient that has been calculated in the first correction coefficient calculating means and on the second correction coefficient that has been calculated in the second correction coefficient calculating means.